Contents Volume 21:1 February 1998

Schyns, P. G., Goldstone, R. L. & Thibaut, J.-P. The development of features in object concepts **1**

Open Peer Commentary

Abdi, H., Valentin, D. & Edelman, B. G. Eigenfeatures as intermediate-level representations: The case for PCA models 17
Benson, P. J. Feature see, feature do 18
Braisby, N. & Franks, B. A creationist myth: Pragmatic combination not feature creation 19
Brooks, L. R. The development of new functional features by instruction: The case of medical education 20
Burgund, E. D. & Marsolek, C. J. Fixed versus flexible features in dissociable neural processing subsystems 21
Cleeremans, A. The other hard problem: How to bridge the gap between symbolic and subsymbolic cognition 22
Deák, G. Flexible feature creation: Child's play? 23
Dominey, P. F. Flexible categorization requires the creation of relational features 23
Dorffner, G. Flexible features, connectionism, and computational learning theory 24
Edelman, S. Things are what they seem 25
French, R. M. & Weaver, M. New-feature learning: How common is it? 26
Gauker, C. Building block dilemmas 26
Grossberg, S. Self-organizing features and categories through attentive resonance 27
Hahn, U. & Chater, N. Real-world categories don't allow uniform feature spaces {endash} not just across categories but within categories also 28
Huettel, S. A. & Lockhead, G. R. A framework for structural constraints on feature creation 29
Hummel, J. E. & Kellman, P. J. Finding the Pope in the pizza: Abstract invariants and cognitive constraints on perceptual learning 30
Lamberts, K. Can features be created on the fly? 30
Latimer, C. R. New features for old: Creation or derivation? 31
MacDorman, K. F. Feature learning, multiresolution analysis, and symbol grounding 32
Palmeri, T. J. Formal models and feature creation 32
Perruchet, P. & Vinter, A. Feature creation as a byproduct of attentional processing 33
Phillips, W. A. Context-dependent feature discovery is evidence that the coordination of function is a basic cognitive capacity 34
Quinn, P. C. Emergence of object representations in young infants: Corroborating findings and a challenge for the feature creation approach 35
Singh, M. & Landau, B. Parts of visual shape as primitives for categorization 36
Tanaka, J. Parts, features, and expertise 37
Tijsseling, A. Do features arise out of nothing? 38
Wiemer-Hastings, K. & Graesser, A. C. Who needs created features? 39
Williams, P., Gauthier, I. & Tarr, M. J. Feature learning during the acquisition of perceptual expertise 40

Authors' Response

Schyns, P. G., Goldstone, R. L. & Thibaut, J.-P. Ways of featuring in object categorization 41

Millikan, R. G. A common structure for concepts of individuals, stuffs, and real kinds: More Mama, more milk, and more mouse **55**

Open Peer Commentary

Allen, C. Animal concepts 66
Bloom, P. Different structures for concepts of individuals, stuffs, and real kinds: One Mama, more milk, and many mice 66
Boyer, P. If "tracking" is category-specific a "common structure" may be redundant 67
Cangelosi, A. & Parisi, D. Concepts in artificial organisms 68
Carlson, G. Names, and what they are names of 69
Franks, B. & Braisby, N. What is the point? Concepts, description, and rigid designation 70
Gauker, C. Are there wordlike concepts too? 70
Gendler, T. S. Why language is not a "direct medium" 71
Ghiselin, M. T. Etiological classification and the acquisition and structure of knowledge 72
Gopnik, A. What can externalism do for psychologists? 73
Hampton, J. A. Staying in touch: Externalism needs descriptions 74
Hauser, M. D. & Fitch, W. T. Reidentification and redescription 74
Keil, F. The most basic units of thought do more, and less, than point 75
Komatsu, L. K. Mapping Millikan's conceptual work onto (empirical) work by psychologists 76
Livingston, K. R. Concept acquisition and use occurs in (real) context 77
MacLennan, B. J. Finding order in our world: The primacy of the concrete in neural representations and the role of invariance in substance reidentification 78
Mandler, J. M. Whatever happened to meaning? 79
Müller, V. C. & Kelter, S. Too much substance, not enough cognition 80
Murphy, G. L. Extensional assumptions in theories of meaning and concepts 80
Nelson, K. Beyond substance concepts in cognitive development 81
Perner, J. Room for concept development? 82
Scharer, N. Can mere phonemes be components of Millikan's substance concepts? 83
Schröder, J. Explanatory force, antidescriptionism, and the common structure of substance concepts 84
Slater, C. More me? Substance concepts and self concepts 85
ter Meulen, A. G. B. Semantic realism, rigid designation, and dynamic semantics 85

van Brakel, J. A white thing 86
Waxman, S. & Thompson, W. Words are invitations to learn about categories 88
Xu, F., Tenenbaum, J. B. & Sorrentino, C. M. Concepts are not beliefs, but having concepts is having beliefs 89

Author's Response
Millikan, R. G. Words, concepts, and entities: With enemies like these, I don't need friends 89

Heyes, C. M. Theory of mind in nonhuman primates **101**

Open Peer Commentary
Bard, K. A. Imitation and mirror self-recognition may be developmental precursors to theory of mind in human and nonhuman primates 115
Baum, W. M. Why not ask "Does the chimpanzee have a soul?" 116
Byrne, R. W. So much easier to attack straw men 116
Csibra, G. Seeing is not believing 117
Custance, D. Apes ape! 118
Gallup, Jr., G. G. Mirrors and radical behaviorism: Reflections on C. M. Heyes 119
Gómez, J. C. Assessing theory of mind with nonverbal procedures: Problems with training methods and an alternative "key" procedure 119
Gordon, R. M. The prior question: Do *human* primates have a theory of mind? 120
Gray, C. & Russell, P. Theory of mind in nonhuman primates: A question of language? 121
Green, S. M., Wilson, D. L. & Evans, S. Anecdotes, omniscience, and associative learning in examining the theory of mind 122
Kamawar, D. & Olson, D. R. Theory of mind in young human primates: Does Heyes's task measure it? 122
Leavens, D. A. Having a concept "see" does not imply attribution of knowledge: Some general considerations in measuring "theories of mind" 123
Matheson, M. D., Cooper, M., Weeks, J., Thompson, R. & Fragaszy, D. Attribution is more likely to be demonstrated in more natural contexts 124
Miles, H. L. & Roberts, W. P. Methodologies, not method, for primate theory of mind 126
Mitchell, R. W. & Anderson, J. R. Primate theory of mind is a Turing test 127
Parker, A. Primate cognitive neuroscience: What are the useful questions? 128
Pepperberg, I. M. To see or not to see, that is the question: Designing experiments to test perspective-taking in nonhumans 128
Purdy, J. E. & Domjan, M. Tactics in theory of mind research 129
Slaughter, V. & Mealey, L. Seeing is not (necessarily) believing 130
Suddendorf, T. Simpler for evolution: Secondary representation in apes, children, and ancestors 131
Walker, S. F. Precursors to theories of mind in nonhuman brains 131
Whiten, A. Triangulation, intervening variables, and experience projection 132
Zentall, T. R. What can we learn from the absence of evidence? 133

Author's Response
Heyes, C. M. Liberalism, chauvinism, and experimental thought 134

Continuing Commentary

On Verleger, R. (1988) Event-related potentials and cognition: A critique of the context updating hypothesis and an alternative interpretation of P3. BBS 11:343–427. 149

On Donchin, E. & Coles, M. G. H. (1988) Is the P300 component a manifestation of context updating? BBS 11:357–374. 149

Sommer, W., Leuthold, H. & Matt, J. The expectancies that govern the P300 amplitude are mostly automatic and unconscious 149

Author's Responses
Verleger, R. Toward an integration of P3 research with cognitive neuroscience 150
Donchin, E. & Coles, M. G. H. Context updating and the P300 152

On Greenfield, P. M. (1991) Language, tools and brain: The ontogeny and phylogeny of hierarchically organized sequential behavior. BBS 14:531–595. 154

Givon, T. Toward a neurology of grammar 154
Swann, P. Greenfield on language, tools, and brain 155

Author's Response
Greenfield, P. M. Language, tools, and brain revisited 159

On Koriat, A. & Goldsmith, M. (1996) Memory metaphors and the real-life/laboratory controversy: Correspondence versus storehouse conceptions of memory 164

Cohen, G. Measuring accuracy is an intractable problem 164
Shanon, B. Metaphorical pluralism–not on the substantive level! 164

Author's Response
Koriat, A. & Goldsmith, M. Methodological and substantive implications of a metatheoretical distinction: More on correspondence versus storehouse metaphors of memory 165

Contents Volume 21:2 April 1998

Chow, S. L. Précis of *Statistical significance: Rationale, validity, and utility* 169

Open Peer Commentary

Blaich, C. F. The null-hypothesis significance-test procedure: Can't live with it, can't live without it 194
Boklage, C. E. On the position of statistical significance in the epistemology of experimental science 195
Bookstein, F. L. Statistical significance testing was not meant for weak corroborations of weaker theories 195
Dar, R. Null hypothesis tests and theory corroboration: Defending NHSTP out of context 196
Erwin, E. The logic of null hypothesis testing 197
Frick, R. W. Chow's defense of null-hypothesis testing: Too traditional? 199
Gigerenzer, G. We need statistical thinking, not statistical rituals 199
Glück, J. & Vitouch, O. Stranded statistical paradigms: The last crusade 200
Gregson, R. A. M. Understanding Bayesian procedures 201
Harris, R. J. "With friends like this . . . ": Three flaws in Chow's defense of significance testing 202
Hayes, A. F. Reconnecting data analysis and research design: Who needs a confidence interval? 203
Hunter, J. E. Testing significance testing: A flawed defense 204
Kihlstrom, J. F. If you've got an effect, test its significance; if you've got a weak effect, do a meta-analysis 205
Kraemer, H. C. Statistical significance: A statistician's view 206
Krueger, L. E. The Ego has landed! The .05 Level of statistical significance is soft (Fisher) rather than hard (Neyman/Pearson) 207
Kyburg, Jr., H. E. Logic and the foundations of statistical inference 208
Lashley, B. R. A defense of statistical power analysis 209
Lewandowsky, S. & Maybery, M. The critics rebutted: A Pyrrhic victory 210
Maher, B. When the coefficient hits the clinic: Effect size and the size of the effect 211
Mayo, D. G. Some problems with Chow's problems with power 212
Nester, M. R. Significance tests cannot be justified in theory-corroboration experiments 213
Palm, G. Significance testing - does it need this defence? 214
Poitevineau, J. & Lecoutre, B. Some statistical misconceptions in Chow's *Statistical significance* 215
Rindskopf, D. Null-hypothesis tests are not completely stupid, but Bayesian statistics are better 215
Rossi, J. S. Meta-analysis, power analysis, and the null-hypothesis significance-test procedure 216
Rouanet, H. Significance testing in a Bayesian framework: Assessing direction of effects 217
Shafto, M. G. Costs and benefits of statistical significance tests 218
Snow, P. Inductive strategy and statistical tactics 219
Stam, H. J. & Pasay, G. A. The historical case against null-hypothesis significance testing 219
Swijtink, Z. G. A plea for Popperian significance testing 220
Tassinary, L. G. Significance tests: Necessary but not sufficient 221
Thyer, B. A. On various methods of reporting variance 222
Verplanck, W. S. Statistical inference: Why wheels spin 223
Vicente, K. J. Four reasons why the science of psychology is still in trouble 224
Vokey, J. R. Statistics without probability: Significance testing as typicality and exchangeability in data analysis 225
Waller, N. G. & Johnson, W. O. The *non*-significance of straw man arguments 226
Zumbo, B. D. A viable alternative to null-hypothesis testing 227

Author's Response

Chow, S. L. The null-hypothesis significance-test procedure is still warranted 228

Sussman, H. M., Fruchter, D., Hilbert, J. & Sirosh, J. Linear correlates in the speech signal: The orderly output constraint 241

Open Peer Commentary

Blumstein, S. E. The mapping from acoustic structure to the phonetic categories of speech: The invariance problem 260
Brancazio, L. Does locus-equation linearity really matter in consonant perception? 261
Carré, R. Linear correlates in the speech signal: Consequences of the specific use of an acoustic tube? 261
Damper, R. I. Self-learning and self-organization as tools for speech research 262
Deng, L. Locus equation and hidden parameters of speech 263
Diehl, R. L. Locus equations: A partial solution to the problem of consonant place perception 264
Fitch, W. T. & Hauser, M. D. Differences that make a difference: Do locus equations result from physical principles characterizing all mammalian vocal tracts? 264
Fowler, C. A. The orderly output constraint is not wearing any clothes 265
Govindarajan, K. Listeners' perceptual mapping of locus equations and variability 266
Greenberg, S. In search of the unicorn: Where is the invariance in speech? 267
Guenther, F. H. An account of the locus equation phenomenon based on speech movement planning 268
Herrnberger, B. & Ehret, G. Linearity or separability? 269
Idsardi, W. J. A phonological perspective on locus equations 270
Jongman, A. Are locus equations sufficient or necessary for obstruent perception? 271
Kanwal, J. S. Charting speech with bats without requiring maps 272
Kluender, K. R. Locus equations reveal learnability 273

Lindblom, B. An articulatory perspective on the locus equation 274
Massaro, D. W. Integrating cues in speech perception 275
Mattingly, I. G. Why did coarticulation evolve? 275
Moore, D. R. & King, A. J. What can auditory neuroethology tell us about speech processing? 276
Nearey, T. M. Locus equations and pattern recognition 277
Ohl, F. W. & Scheich, H. Feature extraction and feature interaction 278
Pastore, R. E. & Crawley, E. J. Locus equation: Assumption and dependencies 278
Pind, J. Merits of a Gibsonian approach to speech perception 279
Protopapas, A. & Tallal, P. On the ontogeny of combination-sensitive neurons in speech perception 280
Remez, R. E. Listening to speech in the dark 281
Ryan, M. J., Kime, N. M. & Rosenthal, G. G. Patterns of evolution in human speech processing and animal communication 282
Sawusch, J. R. Acoustic correlates and perceptual cues in speech 283
Schreiner, C. E. Input limitations for cortical combination-sensitive neurons coding stop-consonants? 284
Smits, R. Locus equations in models of human classification behavior 284
Wagner, H. & Kautz, D. Evolutionary conservation and ontogenetic emergence of neural algorithms 285
Wenstrup, J. J. Combination-sensitive neurons: A flexible neural strategy for analyzing correlated elements in sounds 286

Authors' Response

Sussman, H. M., Fruchter, D., Hilbert, J. & Sirosh, J. Human speech: A tinkerer's delight 287

Continuing Commentary

On Rao, K. R. & Palmer, J. (1987) The anomaly called psi: Recent research and criticism. BBS 10:539–551. 301

On Alcock, J. E. (1987) Parapsychology: Science of the anomalous or search for the soul? BBS 10:553–643. 301

Glicksohn, J. The anomaly of the anomalous 301

Author's Response

Palmer, J. Parapsychology, anomaly, and altered states of consciousness 302

Author's Response

Alcock, J. E. Science, pseudoscience, and anomaly 303

On Wilson, D. S. & Sober, E. (1994) Reintroducing group selection to the human behavioral sciences. BBS 17:585–654. 304

Thompson, N. S. Reintroducing "Reintroducing group selection to the human behavioral sciences" to BBS readers 304

Authors' Response

Wilson, D. S. & Sober, E. Multilevel selection and the return of group-level functionalism 305

On Clark, A. & Thornton, C. (1997) Trading spaces: Computation, representation, and the limits of uninformed learning. BBS 20:57–90. 307

Damper, R. I. Parity still isn't a generalisation problem 307

Authors' Response

Thornton, C. & Clark, A. Reading the generalizer's mind 308

Contents Volume 21:3 June 1998

Fitch, R. H. & Denenberg, V. H. A role for ovarian hormones in sexual differentiation of the brain 311

Open Peer Commentary

Aboitiz, F. To normalize or not to normalize for overall size? 327
Baum, M. J. & Tobet, S. A. Sexual differentiation of callosal size: Hormonal mechanisms and the choice of an animal model 328
Clarke, S. Sex-related differences in callosal morphology and specific callosal connectivity: How far can we go? 329
Döhler, K. D. More evidence for the role of estrogens in female differentiation of the brain 329
Halpern, D. F. Recipe for a sexually dimorphic brain: Ingredients include ovarian and testicular hormones 330
Hampson, E. Is the size of the human corpus callosum influenced by sex hormones? 331
Hines, M. Activation/organization, masculinization/feminization: What are they and how are they distinguished? 332
Holloway, R. L. Relative size of the human corpus callosum redux: Statistical smoke and mirrors? 333
Hugdahl, K. The corpus callosum: More than a passive "corpus" 335
Juraska, J. M. Updates on axons in the rat corpus callosum 335
Meyer-Bahlburg, H. F. L. Estrogens in human psychosexual differentiation 336
Rogers, L. J. Indirect influences of gonadal hormones on sexual differentiation 337
Stewart, J. Female and flexible? 338
Wahlsten, D. & Bishop, K. M. Effect sizes and meta-analysis indicate no sex dimorphism in the human or rodent corpus callosum 338
Wallen, K. Ovarian influences on female development: Revolutionary or evolutionary? 339
Williams, C. L. & Sandstrom, N. J. Parallel or serial processes in sexual differentiation? 340

Authors' Response

Fitch, R. H. & Denenberg, V. H. Default is not in the female, but in the theory 341

Mazur, A. & Booth, A. Testosterone and dominance in men 353

Open Peer Commentary

Archer, J. Problems with the concept of dominance and lack of empirical support for a testosterone–dominance link 363
Brain, P. F. Androgens and human behaviour: A complex relationship 363
Bribiescas, R. G. Testosterone and dominance: Between-population variance and male energetics 364
Campbell, A., Muncer, S. & Odber, J. Primacy of organising effects of testosterone 365
Cashdan, E. Why is testosterone associated with divorce in men? 366
Chambers, K. C. Target tissue sensitivity, testosterone – social environment interactions, and lattice hierarchies 366
Christensen, S. E. & Breedlove, S. M. Seductive allure of dichotomies 367
Cohen, D. Shaping, channelling, and distributing testosterone in social systems 367
Collaer, M. L. Early organizational influences and social factors: A need for further evaluation 368
Constantino, J. N. Dominance and aggression over the life course: Timing and direction of causal influences 369
Coren, S. Prenatal testosterone exposure, left-handedness, and high school delinquency 369
Dabbs, Jr., J. M. Testosterone and the concept of dominance 370
deCatanzaro, D. & Spironello, E. Of mice and men: Androgen dynamics in dominance and reproduction 371
Denenberg, V. H. Testosterone is non-zero, but what is its strength? 372
Flinn, M., Baerwald, C., Decker, S. & England, B. Evolutionary functions of neuroendocrine response to social environment 372
Foss, J. Testosterone and the second sex 374
Fox, R. Testosterone is not alone: Internal secretions and external behavior 375
Grant, V. J. Dominance runs deep 376
Hines, M. Adult testosterone levels have little or no influence on dominance in men 377
Kacelnik, A. & Norris, S. Signalling via testosterone: Communicating health and vigour 378
Kemper, T. D. Fantasy, females, sexuality, and testosterone 378
Kenrick, D. T. & Barr, A. Testosterone's role in dominance, sex, and aggression: Why so controversial? 379
Mealey, L. Testosterone-aggression relationship: An exemplar of interactionism 380
Mueller, U. Aggressiveness and dominance 381
O'Carroll, R. E. Placebo-controlled manipulations of testosterone levels are required to test the hypothesis that dominance and testosterone are causally related in man 382
Oliveira, R. F. Of fish and men: A comparative approach to androgens and social dominance 383
Snowdon, C. T. The nurture of nature: Social, developmental, and environmental controls of aggression 384
Steele, J. Honour subcultures and the reciprocal model 385
Townsend, J. M. Dominance, sexual activity, and sexual emotions 386

Authors' Response

Booth, A. & Mazur, A. Old issues and new perspectives on testosterone research 386

Howe, M. J. A., Davidson, J. W. & Sloboda, J. A. Innate talents: Reality or myth? 399

Open Peer Commentary

Baltes, P. B. Testing the limits of the ontogenetic sources of talent and excellence 407
Baron-Cohen, S. Superiority on the Embedded Figures Test in autism and in normal males: Evidence of an "innate talent"? 408
Bronfenbrenner, U. & Ceci, S. J. Could the answer be talent? 409
Charness, N. Explaining exceptional performance: Constitutent abilities and touchstone phenomena 410
Csikszentmihalyi, M. Fruitless polarities 411
Detterman, D. K., Gabriel, L. T. & Ruthsatz, J. M. Absurd environmentalism 411
Eisenberger, R. Achievement: The importance of industriousness 412
Ericsson, K. A. Basic capacities can be modified or circumvented by deliberate practice: A rejection of talent accounts of expert performance 413
Feldman, D. H. & Katzir, T. Natural talents: An argument for the extremes 414
Freeman, J. Inborn talent exists 415
Gagné, F. A biased survey and interpretation of the nature–nurture literature 415
Hatano, G. Might we adopt the learning-related account instead of the talent account? 416
Heller, K. A. & Ziegler, A. Experience is no improvement over talent 417
Humphreys, L. G. General intelligence is central to many forms of talent 418
Irvine, S. H. Innate talents: A psychological tautology? 419
Lehmann, A. C. Historical increases in expert performance suggest large possibilities for improvement of performance without implicating innate capacities 419
Plomin, R. Genetic influence and cognitive abilities 420
Rowe, D. C. Talent scouts, not practice scouts: Talents are real 421
Rutter, M. What can we learn from highly developed special skills? 422
Schneider, W. Innate talent or deliberate practice as determinants of exceptional performance: Are we asking the right question? 423
Simonton, D. K. Defining and finding talent: Data and a multiplicative model? 424
Starkes, J. & Helsen, W. Practice, practice, practice – Is that all it takes? 425
Sternberg, R. J. If the key's not there, the light won't help 425
Stevenson, R. J. Training quality and learning goals: Towards effective learning for all 426
Tesch-Römer, C. Attributed talent is a powerful myth 427
Trehub, S. E. & Schellenberg, E. G. Cultural determinism is no better than biological determinism 427
Vitouch, O. The rage to drink, or: Frontiers of expertise 428
Weisberg, R. W. Creativity and practice 429
Winner, E. Talent: Don't confuse necessity with sufficiency, or science with policy 430
Zohar, A. H. Individual differences in some special abilities are genetically influenced 431

Authors' Response

Howe, M. J. A., Davidson, J. W. & Sloboda, J. A. Natural born talents undiscovered 432

Continuing Commentary

On Geary, D. C. (1996) Sexual selection and sex differences in mathematical abilities. BBS 19:229–284. 443

Frost, P. Sex differences may indeed exist for 3-D navigational abilities. But was sexual selection responsible? 443

Author's Response

Geary, D. C. Sexual selection, the division of labor and the evolution of sex differences 444

Contents Volume 21:4 August 1998

Edelman, S. Representation is representation of similarities 449

Open Peer Commentary

Andresen, D. R. & Marsolek, C. J. Chorus of *k* prototypes or discord of contradictory representations? 467
Benson, P. J. Seeing wood because of the trees? A case of failure in reverse-engineering 468
Bonmassar, G. & Schwartz, E. L. Representation is space-variant 469
Eisler, H. Distal similarity, shape referents, subjective world, and redundancy 470
Eklundh, J.-O. & Carlsson, S. Appearance is more than shape, illumination, and pose 470
Földiák, P. What is wrong with prototypes 471
Goldstone, R. L. Objects, please remain composed 472
Gregson, R. A. M. Metric assumptions are neither necessary nor sufficient to describe similarities 473
Grossberg, S. Representations need self-organizing top-down expectations to fit a changing world 473
Hahn, U. & Chater, N. The notion of distal similarity is ill defined 474
Intrator, N. Representation of similarities and correspondence structure 475
Jüttner, M. Representation of similarities – a psychometric but not an explanatory concept for categorization 475
Latimer, C. The Chorus scheme: Representation or isomorphism, holistic or analytic? 476
Markman, A. B. & Yamauchi, T. Boundary conditions and the need for multiple forms of representation 477
Palm, G. How to combine interpolation with feedback? 478
Postma, E., van den Herik, J. & Hudson, P. Attentional dynamics and a chorus of geons 479
Sokolov, E. N. Vector code differences and similarities 479
Stuart, B. V. Visual tasks require manipulable representations 480
Tovée, M. J. A neural basis for the Chorus model? 481
van Brakel, J. A multiculture of veridicalities 481
van Leeuwen, C. Regular spaces versus computing with chaos 482
Williamson, J. R. How is representation learned? 484

Author's Response

Edelman, S. Shape representation by Second-order *I*somorphism and the Chorus model: *SIC* 484

MacNeilage, P. F. The frame/content theory of evolution of speech production 499

Open Peer Commentary

Abbs, J. H. & DePaul, R. Motor cortex fields and speech movements: Simple dual control is implausible 511
Abry, C., Böe, L.-J., Laboissière, R. & Schwartz, J.-L. A new puzzle for the evolution of speech? 512
Andrew, R. J. Cyclicity in speech derived from call repetition rather than from intrinsic cyclicity of ingestion 513
Bloom, K. The missing link's missing link: Syllabic vocalizations at 3 months of age 514
Buckingham, H. W. Embodiment, muscle sense, and memory for speech 515
Carstairs-McCarthy, A. The frame/content model and syntactic evolution 515
Ghazanfar, A. A. & Katz, D. B. Distributed neural substrates and the evolution of speech production 516
Goldberg, G. & Brooks, R. Premotor systems, language-related neurodynamics, and cetacean communication 517
Greenberg, S. A syllable-centric framework for the evolution of spoken language 518
Harley, T. A. Content without a frame? The role of vocabulary biases in speech errors 518
Jürgens, U. Speech evolved from vocalization, not mastication 519
Levelt, W. J. M & Schiller, N. O. Is the syllable frame stored? 520
Lieberman, P. Speech evolution: Let barking dogs sleep 520
Lindblom, B. A curiously ubiquitous articulatory movement 521
Lund, J. P. Is speech just chewing the fat? 522
McCune, L. Frame dominance: A developmental phenomenon? 522
Menn, L. A multi-modal, emergent view of the development of syllables in early phonology 523
Munhall, K. G. & Jones, J. A. Articulatory evidence for syllabic structure 524
Ohala, J. J. Content first, frame later 525
Pepperberg, I. M. Out of the mouths of babes . . . and beaks of birds? A broader interpretation of frame/content theory for the evolution of speech production 526
Peters, J. On mandibular oscillation as a source of variation in infant vocalizations 527
Rizzolatti, G. What happened to *Homo habilis?* (Language and mirror neurons) 527
Scanlan, J. & Rogers, L. Ingestive and vocal mechanisms in birds: A parallel? 528
Sessle, B. J. Recent evidence of the involvement of lateral frontal cortex in primate cyclic ingestive movements 529
Sieratzki, J. S. & Woll, B. An evolutionary model for the learning of language 530
Walker, S. F. Brain circuits ancient and modern 531
Woll, B. & Sieratzki, J. S. Echo phonology: Signs of a link between gesture and speech 531

Author's Response

MacNeilage, P. F. The frame/content view of speech: What survives, what emerges 532

Atran, S. Folk biology and the anthropology of science: Cognitive universals and cultural particulars **547**

Open Peer Commentary

Aunger, R. The "core meme" meme 569
Boyer, P. Cultural transmission with an evolved intuitive ontology: Domain-specific cognitive tracks of inheritance 570
Dedrick, D. Culture in cognitive science 571
Ellen, R. Doubts about a unified cognitive theory of taxonomic knowledge and its memic status 572
Ghiselin, M. T. Folk metaphysics and the anthropology of science 573
Hampton, J. A. Folk biology and external definitions 574
Hatano, G. Informal biology is a core domain, but its construction needs experience 575
Hays, T. E. Xenophobia and other reasons to wonder about the domain specificity of folk-biological classification 575
Hunn, E. S. Atran's biodiversity parser: Doubts about hierarchy and autonomy 576
Job, R. & Surian, L. A neurocognitive mechanism for folk biology? 577
Johnson, S. C. Folk taxonomies and folk theories: The case of Williams syndrome 578
Leiber, J. Faculty before folk 579
Lillard, A. The source of universal concepts: A view from folk psychology 580
Livingston, K. R. The case for general mechanisms in concept formation 581
MacLaury, R. E. Domain-specificity in folk biology and color categorization: Modularity versus global process 582
Maffie, J. Atran's evolutionary psychology: "Say it ain't just-so, Joe" 583
Matan, A. & Strauss, S. Relations between innate endowments, cognitive development, domain specificity, and a taxonomy-creator 584
Morton, A. What is rank? 585
Roberts, W. P. A comparative and developmental approach to cognitive universals: A possible role for heterochrony 585
Romney, A. K. Measuring cognitive universals and cultural particulars 586
Saunders, B. What is empirical about Atran's taxonomies? 587
Solomon, G. E. A. Innateness, universality, and domain-specificity 588
Sperber, D. Are folk taxonomies "memes"? 589
Stevens, P. F. Cognitive universals, hierarchy, and the history and practice of biological systematics 590
Thompson, M. The living individual and its kind 591
Todd, P. M. & López, A. Pulling the trigger on the living kind module 592

Author's Response

Atran, S. Taxonomic ranks, generic species, and core memes 593

Continuing Commentary

On Epstein, S. D., Flynn, S. & Martohardjono, G. (1996) Second language acquisition: Theoretical and experimental issues in contemporary research. BBS 19: 677-758 611

Herschensohn, J. Universal Grammar and the critical age 611

Author's Response

Martohardjono, G., Epstein, S. D. & Flynn, S. Universal Grammar: Hypothesis space or grammar selection procedures? Is UG affected by Critical Periods? 612

Contents Volume 21:5 October 1998

Van Gelder, T. The dynamical hypothesis in cognitive science 615

Open Peer Commentary

Bechtel, W. Dynamicists versus computationalists: Whither mechanists? 629
Beer, R. D. Framing the debate between computational and dynamical approaches to cognitive science 630
Braisby, N., Cooper, R. & Franks, B. Why the dynamical hypothesis cannot qualify as a law of qualitative structure 630
Bridgeman, B. The dynamical model is a Perceptron 631
Bundy, A. Leaky virtual machines and the best of both worlds 632
Chater, N. & Hahn, U. What *is* the dynamical hypothesis? 633
Chrisley, R. L. What might dynamical intentionality be, if not computation? 634
Crutchfield, J. P. Dynamical embodiments of computation in cognitive processes 635
Davids, K. & Bennett, S. The dynamical hypothesis: The role of biological constraints on cognition 636
Dennett, D. C. Revolution, no! Reform, si! 636
Dietrich, E. & Markman, A. B. All information processing entails computation, or, If R. A. Fisher had been a cognitive scientist. . . 637
Eiser, J. R. The dynamical hypothesis in social cognition 638
Eliasmith, C. Dynamical models and van Gelder's dynamicism: Two different things 639
Franceschetti, D. R. Interlevel connections and agent evolution should not be overlooked 639
French, R. M. & Thomas, E. The dynamical hypothesis: One battle behind 640
Garson, J. W. Why dynamical implementation matters 641
Heath, R. A. Cognitive dynamics: A psychological perspective 642
Horgan, T. & Tienson, J. Resisting the tyranny of terminology: The general dynamical hypothesis in cognitive science 643
Jaeger, H. Today's dynamical systems are too simple 643
Keijzer, F. A., Bem, S. & van der Heijden, L. The dynamics of what? 644
Mitchell, M. Theories of structure versus theories of change 645
Mulhauser, G. R. Nature's subtlety undermines the empirical relevance of both dynamical and computational hypotheses 646
Noelle, D. C. Is the dynamical hypothesis falsifiable: On unification in theories of cognition 647
O'Brien, G. Digital computors versus dynamical systems: A conflation of distinctions 648
Petitot, J. Dynamical modeling and morphological analysis 649
Quartz, S. R. Distinguishing between the computational and dynamical hypotheses: What difference makes the difference? 649
Shanon, B. The intrinsic temporality of human cognition 650
Smithers, T. In time and over time 651
Van der Velde, F. & de Kamps, M. Toward a synthesis of dynamical systems and classical computation 652
Wheeler, M. An appeal for liberalism, or why van Gelder's notion of a dynamical system is too narrow for cognitive science 653

Author's Response

Van Gelder, T. Disentangling dynamics, computation, and cognition 654

Byrne, R. W. & Russon, A. E. Learning by imitation: A hierarchical approach 667

Open Peer Commentary

Bauer, P. J. If it is inevitable, then it need not be imitated 684
Chen, M., Chartrand, T. L., Lee-Chai, A. Y. & Bargh, J. A. Priming primates: Human and otherwise 685
Colman, A. M. Modelling imitation with sequential games 686
Cummins, D. D. Can humans form hierarchically embedded mental representations? 687
Decety, J. & Grèzes, J. A neurobiological approach to imitation 688
De Waal, F. B. M. No imitation without identification 689
Fishbein, H. D. A Piagetian view of imitation 689
Gardner, M. & Heyes, C. Splitting, lumping, and priming 690
Gattis, M., Bekkering, H. & Wohlschläger, A. When actions are carved at the joints 691
Hayne, H. Out of the mouths of babes: a hierarchical view of imitation by human infants 692
Heimann, M. When is imitation imitation and who has the right to imitate? 693
Huber, L. Movement imitation as faithful copying in the absence of insight 694
Jorion, P. J. M. A methodological behaviourist model for imitation 695
Kuczaj, II, S. A., Gory, J. D. & Xitco, Jr., M. J. Using programs to solve problems: Imitation versus insight 695
Mac Aogáin, E. Imitation without attitudes 696
Matheson, M. D. & Fragaszy, D. M. Imitation is not the "Holy Grail" of comparative cognition 697
Midford, P. E. High-level social learning in apes: Imitation or observation-assisted planning? 698
Miklósi, A. In the search for the functional homology of human imitation: Take play seriously! 699
Mitchell, R. W. Great apes imitate actions of others and effects of others' actions 700
Motomura, N. The neural basis of imitative behavior: Parietal actions and frontal programs 700
Roitblat, H. L. Mechanisms of imitation: The relabeled story 701
Todt, D. Hierarchical learning of song in birds: A case of vocal imitation? 702
Tomasello, M. Emulation learning and cultural learning 703
Vereijken, B. & Whiting, H. T. A. Hoist by their own petard: The constraints of hierarchical models 704
Vogt, S. & Carey, D. Toward a microanalysis of imitative actions 705
Want, S. C. & Harris, P. L. Indices of program-level comprehension 706
Whiten, A. How imitators represent the imitated: The vital experiments 707
Zentall, T. R. Insufficient support for either response "priming" or "program-level imitation" 708

Authors' Response

Byrne, R. W. & Russon, A. E. Common ground on which to approach the origins of higher cognition 709

Contents Volume 21:6 December 1998

Pessoa, L., Thompson, E. & Noë, A. Finding out about filling-in: A guide to perceptual completion for visual science and the philosophy of perception **723**

Open Peer Commentary

Appelbaum, I. Analytic isomorphism and speech perception 748
Arrington, K. F. Filling-in as the phenomenal side of binding 749
Bachmann, T. Filling-in as a *within-level* propagation may be an illusion 749
Barlow, H. B. Prediction, inference, and the homunculus 750
Byrne, A. Dennett versus Gibson 751
Davis, G. & Driver, J. The functional effects of modal versus amodal filling-in 752
Dennett, D. C. No bridge over the stream of consciousness 753
De Weerd, P. Linking spread of neural activity and filling-in: A few more arguments in favor 754
Dresp, B. Area, surface, and contour: Psychophysical correlates of three classes of pictorial completion 755
Durgin, F. H. Quasi-modal encounters of the third kind: The filling-in of visual detail 756
Earle, D. C. On the roles of consciousness and representations in visual science 757
Gregory, R. L. The level of filling-in and when it is cognitive 758
Grossberg, S. Filling-in the forms 758
Hahn, L. W. Revising locus of the bridge between neuroscience and perception 759
Kaufman, L. We can't fill in answers to philosophical questions 760
Komatsu, H. Surface representation by population coding 761
Kranda, K. Blindsight in the blind spot 762
Lehar, S. Gestalt isomorphism and the primacy of the subjective perceptual experience 763
Lomas, D. Representational theory emerges unscathed 764
Murakami, I. A retinotopic representation of filling-in: Further supporting evidence 765
Myin, E. Trading in form for content and taking the sting out of the mind-body problem 766
Neumann, H. Representations, computation, and inverse ecological optics 766
O'Regan, J. K. No evidence for neural filling-in – vision as an illusion – pinning down "enaction" 767
Pishva, V. The practical and conceptual case against isomorphism: Evolution and homomorphism 768
Revonsuo, A. Visual perception and subjective visual awareness 769
Ross, W. D. Filling-in while finding out: Guiding behavior by representing information 770
Sauvé, K. Filled-in sensations: The primordial species of imagery? 771
Shipley, T. F. Spatiotemporal unit formation 772
Singh, M. & Hoffman, D. D. Active vision and the basketball problem 772
Spillman, L. & Werner, J. S. How do we see what is not there? 773
Todorović, D. In defense of neuro-perceptual isomorphism 774
Tyler, C. W. The Cartesian Broadway 775
Van Gulick, R. Analytical isomorphism and Marilyn Monroe 776
Varela, F. J. & Vermersch, P. Fully embodying the personal level 777
Walker, R. & Mattingley, J. B. Pathological completion: The blind leading the mind? 778
Whittle, P. Filling-in does require a mechanism, and some persistent doubts 779
Yin, C. A task-oriented taxonomy of visual completion 780

Author's Response

Pessoa, L., Thompson, E. & Noë, A. Filling-in is for finding out 781

Halford, G. S., Wilson, W. H. & Phillips, S. Processing capacity defined by relational complexity: Implications for comparative, developmental, and cognitive psychology 803

Open Peer Commentary

Anderson, J. R., Lebiere, C., Lovett, M. & Reder, L. ACT-R: A higher-level account of processing capacity 831
Berch, D. B. & Foley, E. J. Processing demands associated with relational complexity: Testing predictions with dual-task methodologies 832
Borisyuk, R., Borisyuk, G. & Kazanovich, Y. Synchronization of neural activity and information processing 833
Chalmers, M. & McGonigle, B. On the psychological reality of parallel relational architectures: Whose knowledge system is it anyway? 833
Coch, D. & Fischer, K. W. Discontinuity and variability in relational complexity: Cognitive and brain development 834
Cowan, N. What is more explanatory, processing capacity or processing speed? 835
Frye, D. & Zelazo, P. D. Complexity: From formal analysis to final action 836
Gentner, D. & Rattermann, M. J. Deep thinking in children: The case for knowledge change in analogical development 837
Goswami, U. Is relational complexity a useful metric for cognitive development? 838
Heath, R. A. & Hayes, B. K. Why is capacity limited? Missing dynamics and developmental controversies 839
MacLeod, W. B. Is multi-tasking complex? 840
Navon, D. Is it processing capacity that is being defined? 841
Nikolic, D. Chaotic dimensionality of hand movements define processing capacity by relational complexity 842
Pascual-Leone, J. To appraise developmental difficulty, or mental demand, relational complexity is not enough 843
Plate, T. A. Chunks, bindings, STAR and Holographic Reduced Representations 844

Sweller, J. Can we measure working memory without contamination from knowledge held in long-term memory? 846

Waltz, J. A., Knowlton, B. J. & Holyoak, K. J. Relational complexity, the central executive, and prefrontal cortex 846

Wright, B. And if the developmental data doesnít quite fit . . . 848

Author's Response

Halford, G. S., Wilson, W. H. & Phillips, S. Relational complexity metric is effective when assessments are based on actual cognitive processes 849